

# Rajalakshmi Engineering College

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## NeoColab\_REC\_CS23231\_DATA STRUCTURES

### REC\_DS using C\_Week 2\_MCQ\_Updated

Attempt : 1  
Total Mark : 20  
Marks Obtained : 14

#### Section 1 : MCQ

1. What will be the output of the following program?

```
#include <stdio.h>
#include <stdlib.h>
```

```
struct Node {
    int data;
    struct Node* next;
    struct Node* prev;
};
```

```
int main() {
    struct Node* head = NULL;
    struct Node* tail = NULL;
    for (int i = 0; i < 5; i++) {
        struct Node* temp = (struct Node*)malloc(sizeof(struct Node));
```

```

temp->data = i + 1;
temp->prev = tail;
temp->next = NULL;
if (tail != NULL) {
    tail->next = temp;
} else {
    head = temp;
}
tail = temp;
}
struct Node* current = head;
while (current != NULL) {
    printf("%d ", current->data);
    current = current->next;
}
return 0;
}

```

**Answer**

1 2 3 4 5

**Status : Correct**

**Marks : 1/1**

2. What happens if we insert a node at the beginning of a doubly linked list?

**Answer**

The previous pointer of the new node is NULL

**Status : Correct**

**Marks : 1/1**

3. How do you reverse a doubly linked list?

**Answer**

By swapping the next and previous pointers of each node

**Status : Correct**

**Marks : 1/1**

4. Consider the following function that refers to the head of a Doubly Linked List as the parameter. Assume that a node of a doubly linked list has the previous pointer as prev and the next pointer as next.

Assume that the reference of the head of the following doubly linked list is passed to the below function 1 <--> 2 <--> 3 <--> 4 <--> 5 <--> 6. What should be the modified linked list after the function call?

Procedure fun(head\_ref: Pointer to Pointer of node)

temp = NULL

current = \*head\_ref

While current is not NULL

temp = current->prev

current->prev = current->next

current->next = temp

current = current->prev

End While

If temp is not NULL

\*head\_ref = temp->prev

End If

End Procedure

**Answer**

6 <--> 5 <--> 4 <--> 3 <--> 2 <--> 1.

**Status :** Correct

**Marks :** 1/1

5. What will be the output of the following code?

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
struct Node {
```

```
    int data;
```

```
    struct Node* next;
```

```
    struct Node* prev;
```

```
};
```

```

int main() {
    struct Node* head = NULL;
    struct Node* temp = (struct Node*)malloc(sizeof(struct Node));
    temp->data = 2;
    temp->next = NULL;
    temp->prev = NULL;
    head = temp;
    printf("%d\n", head->data);
    free(temp);
    return 0;
}

```

**Answer**

2

**Status :** Correct

**Marks :** 1/1

6. Consider the provided pseudo code. How can you initialize an empty two-way linked list?

```

Define Structure Node
    data: Integer
    prev: Pointer to Node
    next: Pointer to Node
End Define

```

```

Define Structure TwoWayLinkedList
    head: Pointer to Node
    tail: Pointer to Node
End Define

```

**Answer**

```

struct TwoWayLinkedList* list = malloc(sizeof(struct TwoWayLinkedList)); list-
    &gt;head = NULL; list-&gt;tail = NULL;

```

**Status :** Correct

**Marks :** 1/1

7. Which of the following is false about a doubly linked list?

**Answer**

Implementing a doubly linked list is easier than singly linked list

**Status :** Correct

**Marks :** 1/1

8. Which code snippet correctly deletes a node with a given value from a doubly linked list?

```
void deleteNode(Node** head_ref, Node* del_node) {  
    if (*head_ref == NULL || del_node == NULL) {  
        return;  
    }  
    if (*head_ref == del_node) {  
        *head_ref = del_node->next;  
    }  
    if (del_node->next != NULL) {  
        del_node->next->prev = del_node->prev;  
    }  
    if (del_node->prev != NULL) {  
        del_node->prev->next = del_node->next;  
    }  
    free(del_node);  
}
```

**Answer**

Deletes the node at a given position in a doubly linked list.

**Status :** Wrong

**Marks :** 0/1

9. What will be the effect of setting the prev pointer of a node to NULL in a doubly linked list?

**Answer**

The node will become the new head

**Status :** Correct

**Marks :** 1/1

10. What is the correct way to add a node at the beginning of a doubly linked list?

**Answer**

```
void addFirst(int data){&nbsp;Node* newNode = new Node(data);&nbsp;head-&gt;next = newNode;&nbsp;newNode-&gt;prev = head;&nbsp;head = newNode;}
```

**Status : Wrong**

**Marks : 0/1**

11. How many pointers does a node in a doubly linked list have?

**Answer**

2

**Status : Correct**

**Marks : 1/1**

12. Which of the following statements correctly creates a new node for a doubly linked list?

**Answer**

```
struct Node* newNode = (struct Node*) malloc(sizeof(struct Node));
```

**Status : Correct**

**Marks : 1/1**

13. Which pointer helps in traversing a doubly linked list in reverse order?

**Answer**

tail

**Status : Wrong**

**Marks : 0/1**

14. Which of the following information is stored in a doubly-linked list's nodes?

**Answer**

All of the mentioned options

**Status :** Correct

**Marks :** 1/1

15. How do you delete a node from the middle of a doubly linked list?

**Answer**

All of the mentioned options

**Status :** Correct

**Marks :** 1/1

16. Which of the following is true about the last node in a doubly linked list?

**Answer**

Both prev and next pointers are NULL

**Status :** Wrong

**Marks :** 0/1

17. What is a memory-efficient double-linked list?

**Answer**

Each node has only one pointer to traverse the list back and forth

**Status :** Wrong

**Marks :** 0/1

18. What is the main advantage of a two-way linked list over a one-way linked list?

**Answer**

Two-way linked lists allow for traversal in both directions.

**Status :** Correct

**Marks :** 1/1

19. Where Fwd and Bwd represent forward and backward links to the adjacent elements of the list. Which of the following segments of code deletes the node pointed to by X from the doubly linked list, if it is assumed that X points to neither the first nor the last node of the list?

A doubly linked list is declared as

```
struct Node {  
    int Value;  
    struct Node *Fwd;  
    struct Node *Bwd;  
};
```

**Answer**

X->Bwd.Fwd = X->Fwd ; X.Fwd->Bwd = X->Bwd;

**Status : Wrong**

**Marks : 0/1**

20. What does the following code snippet do?

```
struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));  
newNode->data = value;  
newNode->next = NULL;  
newNode->prev = NULL;
```

**Answer**

Creates a new node and initializes its data to 'value'

**Status : Correct**

**Marks : 1/1**